

Name Kay

Period _____

Density Worksheet

In order to receive full credit, you must show ALL work and circle your final answer.

1. 100 grams of a liquid completely fill a 200 mL bottle. What is the density of the liquid?

$$d = \frac{100g}{200mL}$$

$$d = 0.5 \frac{g}{mL}$$

2. A solution has a density of 1.50 g/mL. How many grams are needed to obtain 10.0 mL of solution?

$$M = 1.50 \frac{g}{mL} \cdot 10 mL$$

$$= 15g$$

3. If a block of copper measures 2.00 cm x 4.00 cm x 5.00 cm and weighs 356 grams, what is its density?

$$V = 2.00cm \times 4.00cm \times 5.00cm = 40 cm^3$$

$$d = \frac{356g}{40 cm^3}$$

$$= 8.9 \frac{g}{cm^3}$$

4. The density of mercury is 13.6 g/mL.

- a. what is the mass of 8.20 mL of mercury?

$$M = 13.6 \frac{g}{mL} \times 8.20 mL$$

$$= 111.5 g$$

- b. what volume would 120 grams of mercury occupy?

$$V = \frac{120g}{13.6 g/mL}$$

$$= 8.8 mL$$

5. A piece of silver has a mass of 2800 grams and occupies a volume of 266 cm³. What is the density of silver?

$$d = \frac{2800g}{266 cm^3}$$

$$= 10.5$$

$$= 11 \frac{g}{cm^3}$$

$$\frac{m}{d/v}$$

6. A bottle has a capacity of 1.2 liters. If the density of ether is 0.74 g/mL, what mass of ether can the bottle hold?

$$m = (1.2 \text{ L} \times 1000) \times 0.74 \frac{\text{g}}{\text{mL}}$$

$$m = 1200 \text{ mL} \times 0.74 \frac{\text{g}}{\text{mL}} = 888 \text{ g}$$

7. A student pipets 5.00 mL of ethanol into a flask weighing 15.25 grams. She finds that the mass of the flask *plus* ethanol = 19.17 grams. Calculate the density of ethyl alcohol.

$$d = \frac{m}{V} = \frac{(19.17 \text{ g} - 15.25 \text{ g})}{5.00 \text{ mL}} = \frac{3.92 \text{ g}}{5.00 \text{ mL}} = 0.78 \frac{\text{g}}{\text{mL}}$$

8. Peanut oil has a density of 0.92 g/mL. If a recipe calls for $\frac{1}{4}$ cup of peanut oil, what mass of peanut oil is required? (Hint: 1 cup = 237 mL).

$$m = d \cdot V = \frac{237 \text{ mL}}{4} \cdot 0.92 \frac{\text{g}}{\text{mL}} = 59.25 \text{ mL} \cdot 0.92 \frac{\text{g}}{\text{mL}} = 54.51 \text{ g}$$

9. A chemist needs 2.00 g of a liquid compound, which has a density of 0.718 g/mL. If the compound costs \$5.67 per mL, how much will a 2.0 gram sample cost?

$$V = \frac{2.00 \text{ g}}{0.718 \frac{\text{g}}{\text{mL}}} = 2.79 \text{ mL} \times \frac{\$5.67}{\text{mL}} = \$15.82$$

10.

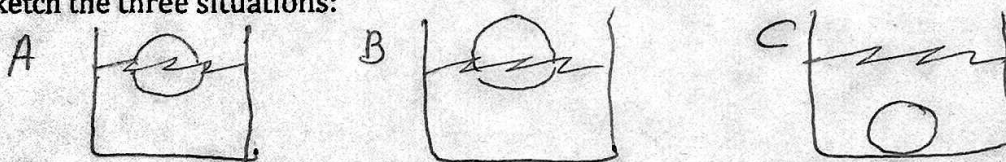
You have three identical balls and three beakers containing different liquids. Each ball has a density of 6 g/mL. You place one ball in each beaker.

In beaker A the ball floats with 50% of its volume submerged

In Beaker B the ball floats with 25 % of its volume submerged

In Beaker C the ball sinks to the bottom.

Sketch the three situations:



Rank the liquids based on their densities from the largest to the smallest.

B A C